Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/US05/018639

International filing date: 23 May 2005 (23.05.2005)

Document type: Certified copy of priority document

Document details: Country/Office: US
Number: 60/573,042
Filing date: 21 May 2004 (21.05.2004)

Date of receipt at the International Bureau: 04 July 2005 (04.07.2005)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)

World Intellectual Property Organization (WIPO) - Geneva, Switzerland
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse

1339691

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

June 29, 2005

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE.

APPLICATION NUMBER: *60/573,042*
FILING DATE: *May 21, 2004*
RELATED PCT APPLICATION NUMBER: *PCT/US05/18639*

Certified by

Jon W. Dudas

Under Secretary of Commerce
for Intellectual Property
and Director of the United States
Patent and Trademark Office

PTO/SB/16 (10-01)
Approved for use through10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.	EL988370334US

73964 U.S. PTO 052104

INVENTOR(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Lawrence	Solomon	7810 Alton Villa CT. Boca Raton, FL 33433

☑ *Additional inventors are being named on the* 1 *separately numbered sheets attached hereto*

22264 60/573042 U.S. PTO 052104

TITLE OF THE INVENTION (500 characters max)

DIVIDIBLE DOSAGE FORM

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☐ Customer Number _____ → *Place Customer Number Bar Code Label here*

Type Customer Number here

OR

☑ Firm or Individual Name	Hedman & Costigan, P.C.				
Address	James V. Costigan				
Address	1185 Avenue of the Americas				
City	New York	State	New York	ZIP	10036-2646
Country	USA	Telephone	212-302-8989	Fax	212-302-8998

ENCLOSED APPLICATION PARTS ***(check all that apply)***

☑ Specification *Number of Pages* 19 ☐ CD(s), Number

☑ Drawing(s) *Number of Sheets* 4 ☐ Other (specify)

☐ Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

☑ Applicant claims small entity status. See 37 CFR 1.27.

☑ A check or money order is enclosed to cover the filing fees

☐ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 08-1540

☐ Payment by credit card. Form PTO-2038 is attached.

FILING FEE AMOUNT ($) $80.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☑ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

Respectfully submitted,

SIGNATURE _____ Date 05/21/2004

TYPED or PRINTED NAME Nicholas P. Chiara REGISTRATION NO. *(if appropriate)* 52,737

TELEPHONE (212) 302-8989 Docket Number: 1322-012

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C. 20231.

PROVISIONAL APPLICATION COVER SHEET
Additional Page

PTO/SB/16 (02-01)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Docket Number	1322-012

INVENTOR(S)/APPLICANT(S)		
Given Name (first and middle [if any])	Family or Surname	Residence (City and either State or Foreign Country)
Allan S.	Kaplan	7011 Mallorca Cresent Boca Raton, FL 33433 USA

Number 2 of 2

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

UNITED STATES PATENT APPLICATION
(PROVISIONAL)

of

Lawrence Solomon

and

Allan Kaplan

DIVIDABLE DOSAGE FORM

DIVIDABLE DOSAGE FORM

FIELD OF THE INVENTION

The invention is concerned with dosage forms such as tablets each of which contains one or more active ingredients, which may be readily and accurately separated into separate parts which contain predetermined quantities of ingredients.

BACKGROUND OF THE INVENTION

It is well known to provide tablets such as tablets for handling pre-measured quantities of materials which allow consumers to use various materials without the need to use expensive and cumbersome measuring devices. Tablets have been used to prepare measured amounts of herbicides, pool treating chemicals, pigments, pharmaceuticals and other solid products which are used in measured amounts. It is common with these tablets to form the tablet with an indentation, commonly referred to as a "score," that is sized and positioned to enable an end user to break the tablet into one or more components. In the prior art, it has not been disclosed to create or form a tablet in which active ingredients are segregated from one another and are able to be subsequently accurately separated from one another in a convenient manner by a patient. One reason for making such a product is to allow for the formulation of incompatible materials in a single tablet. Another reason for making such a product is to allow fully accurate separation of a dose of a drug product. When a combination of different

drugs is being administered and there is a change in circumstances, the ability to separate one drug (or drug combination) from a different drug (or drug combination) provides the capability to accommodate changing therapeutic objectives. Another reason to make such a product is to allow accurate separation of a whole dose of a single drug product, whether the product is that of one individual active drug or a fixed combination of actives.

SUMMARY OF THE INVENTION

The present invention is first concerned with a dosage form that is a tablet containing three layers (zones) wherein there is a middle and two outer (top and bottom) layers, in which adjacent layers have different substances, both outer layers contain one or more active drugs, and the middle layer is substantially inert from a pharmaceutical standpoint. The invention further entails the middle layer that is able to be conveniently and completely separated by an end user, a nurse, a hospital pharmacist, etc., such that when said layer is broken centrally, the outer layers are completely separated from each other and remain substantially completely intact. The method of breakage may be manual, but manual breakability is not required if mechanical breakage may be conveniently accomplished by ordinary means such as by utilizing a commercially-available tablet cutter, a kitchen knife, or a penknife ("manual or mechanical").

The invention provides a method of allowing a

patient or other person, such as a nurse, caregiver or pharmacist to divide the dosage form in order to precisely administer an altered dose of a drug or a combination of drugs or to administer only one of two more active drugs (or drug combinations) that are separated and placed in different zones of the same dosage form. The invention is concerned with the making of a dosage form for the administration of pharmaceuticals or other materials suitable for use in humans or animals and applications which may include non-animal use.

A dosage form of the invention may comprise three or more zones which comprise a plurality of stratified layers which are disposed upon each other and that, in the most preferred embodiment which consists of three stratified layers, comprises a middle (central) substantially inert layer that keeps the outer (top and bottom) layers together under normal storage conditions. The outer layers each contain one or more active ingredients, herein generally described as a pharmaceutical agent or drug. The middle layer may be completely and conveniently separated (divided) leaving the outer layers intact.

Accordingly, it is a primary object of the invention to provide novel dosage forms which contain active ingredients in different zones which may be conveniently and completely separated from each other. Separation through the inert layer may be done manually or by such readily available mechanical means such as commercially-available tablet cutters, kitchen knives, etc.

It is also an object of the invention to provide novel bi-layer and tri-layer dosage forms which have active ingredients in different zones which comprise stratified layers that are separable from each other, though not precisely separable.

The invention also includes such dosage forms as a bi-layer or tri-layer tablet; each layer includes one or more active ingredient(s). The bi-layer or tri-layer tablets for example may be cylindrical solids or rectangular solids with or without beveled edges, or solid forms of other shapes that allow convenient separation of the layers. The transverse perimeter may range from approximately circular to approximately rectangular, to give an approximately cylindrical or approximately rectangular solid configuration to the dosage form. Both the top and bottom layer may be unscored, or may have simple or complex scoring.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a tri-layer tablet having a cylindrical shape and an inert layer having a thickness that approximates the thickness of the active layers.

Fig. 2 is a cross-section of a tri-layer tablet having an inert layer which is thicker than the combined thickness of the active layers.

Fig. 3 is a cross-section of a tri-layer tablet having a placebo layer that is thicker than the combined thickness of the active layers.

Fig. 4 is a cross-section of a cylindrical bi-layer tablet having two active layers.

DETAILED DESCRIPTION OF THE INVENTION

Tri-layer Tablets With Inert Central Layer

Tri-layer tablets may be made using a standard tri-layer tablet press when tablets are to be produced having three layers, whether or not the middle layer is substantially inert or as is described in the following section, may contain active drug(s). Most preferentially, the tablet is taller than it is wide. The transverse perimeter may be approximately circular or rectangular, to give an approximately cylindrical or rectangular solid configuration to the dosage form, but other transverse configurations may exist such as approximately triangular. Typically, the bottom and top active layers will have mild beveling, but may have other shapes. Both the top and bottom layer may be unscored, or may have simple or complex scoring.

Also within the scope of the invention are tri-layer tablets of similar height (measured as the distance from the bottom the first-made layer to the top of the last-made layer of the tablet) compared to width (measured as the larger of the two remaining dimensions, or diameter if circular); and least preferred is a tri-layer tablet with width greater than height. In each of the examples in this section, the separating layer will structurally allow complete separation from each other of the layers

containing the active drug components.

The inert central layer may be composed of any granulation; however, a preferred granulation includes that composed of the common aspects of the granulations of the top and bottom layers, minus the actives. The inert layer is breakable manually or mechanically in such a way that the breakage does not involve any layer other then the central inert layer.

Each layer will preferentially be of a different color, unless the top and bottom layers contain identical active ingredient(s). The top and bottom layers may have embossing patterns that allow identification of them; and, post-production, differentiating markings may be applied to any or all layers as can be performed in a standard fashion.

The central inert layer need not have a score, and if there is a score, it need not be functional; however, should a score be desired, it would under current means of tablet manufacture be made after the tablet is produced. The manner in which it would be produced would involve alignment of the tablets in a uniform manner, followed by manual, semi-automated, or automated scoring through the inert layer. Generally this would be transverse scoring. Vertical scoring may be added as well, which may be useful to connect with scoring present in the active layers. The exact means of adding the transverse score could involve exposing the upper surface of the tablet to a sharp - edged device, and either pulling the sharp edge(s) across the tablet past the incising edge(s),

or pulling the sharp edge(s) across the tablet, in either case producing the desired scoring pattern. A similar technique could be applied to a vertical score. Rather than via a complete score, there may be delineation of a separation zone by means of one or more cuts into the inert layer, serving to guide a person to a proper breaking zone. Preferably, the transverse score or cut(s) into the inert layer will be placed centrally in the inert layer.

The most preferred design as discussed above maximizes the tablet volume devoted to the active layers relative to the inert layer. It is contemplated that the thickness of the inert (or placebo) layer may be that which is sufficient to allow a cutting means, e.g., a tablet cutter, to pass through the inert layer without affecting the active layers. In practice, the use of automated tabletting machines may cause the inert layer to assume an orientation other than purely horizontal in cross-section due to the inability to control the deformation of the granulations during compression and the resulting profile is to be considered in designing the thickness of the inert layer. Convenient manual or mechanical breakage of the inert layer will be taken into account when designing the thickness of the inert layer.

As shown in Fig. 1, two layers 2 and 4 each containing active drug(s) are located at the top and the bottom of the cylindrical shaped tri-layer tablet. Inert layer 6 joins the two active layers and because h in this example is greater than t, the tablet is conveniently breakable through layer 6 with

manual or mechanical force.

Fig.2 shows an alternate shape for a cylindrical tablet according to the invention.

Fig. 3 is a side view of an alternate embodiment in which the height of the inert (or placebo) layer 18 is substantially greater than the combined thicknesses of the active layers 14 and 16. This configuration easily allows the use of force to be applied to the inert layer to cause the inert layer to be broken at notch 20 which may optionally be extended as a score around all or a part of the tablet.

Fig. 4 is a side view of a cylindrical tablet having a smaller prednisone layer 14 and a larger theophylline layer 16. A score line 18 is provided which extends around the tablet below the interface of the prednisone and theophylline layers. Not shown is a tri-layer tablet of theophylline, prednisone and albuterol which structurally is similar to Fig. 1.

It is contemplated that among the many possible active drugs to be placed in the dosage forms of the invention the following would be particularly desirable for such reasons as the need for flexibility in the amount of drug to be administered or in the desirability of, from time to time, not administering a drug component of a combination drug product.

Examples of drug substances that may be present in each layer of the tri-layered tablet follow. Each

drug may be present within each end layer of the tablet, or one member of each class below may be found within the top layer and a drug from a different class can be found in the bottom layer. One or more of the active layers may contain a combination of active drugs. It is also possible to make a useful product containing different active drugs from within the same class of medications. Any of the following agents may be usefully be placed in both the top and bottom layer of the same tablet.

Examples relating to the above include, without limitation:

HYPOGLYCEMIC AGENTS:
Thiazolidinediones: Pioglitazone, rosiglitazone.
Sulfonylureas: Glyburide, glipizide, glimepiride, chlorpropamide.
Biguanides: Metformin.
Meglitinides: Nateglinide, repaglinide.
Glucosidase inhibitors: Acarbose, miglitol.

ANTIHYPERTENSIVE AGENTS:

Beta-blockers:
Acebutolol, atenolol, bisoprolol, celiprolol, metoprolol, mebivolol, carvedilol (a mixed alpha-beta blocker), nadolol, oxprenolol, penbutolol, pindolol, propranolol, timolol, betaxolol, carteolol.

Calcium antagonists (calcium-channel blockers):
Nifedipine, amlodipine, verapamil, diltiazem, nisoldipine, felodipine, isradipine, lacidipine, lercanidipine, nicardipine, manidipine.

Thiazide-type diuretics (with or without potassium-retaining diuretics such as triamterene, amiloride, spironolactone, etc.):
Hydrochlorothiazide, chlorothiazide, cyclopenthiazide, polythiazide, bendrofluazide, hydroflumethiazide, chlorthalidone, indapamide, methylclothiazide, metolazone.

Angiotensin converting enzyme inhibitors:
Captopril, enalapril, lisinopril, ramipril, trandolapril, quinapril, perindopril, moexipril, benazepril, fosinopril

Angiotensin receptor blockers:
Losartan, valsartan, candesartan, telmisartan, eprosartan, irbesartan.

High-ceiling (loop) diuretics (with or without potassium-retaining diuretics such as triamterene, amiloride, or spironolactone):
Furosemide, torsemide, ethacrynic acid, bumetamide

Aldosterone antagonist diuretics:
Spironolactone, eplerenone.

Alpha-blockers:
Doxazosin, terazosin, prazosin, indoramin, labetolol (a mixed alpha-beta blocker).

Central alpha-agonists:
Clonidine, methyldopa.

Imidazoline:
Moxonidine.

Direct vasodilators:

Hydralazine, minoxidil.

Adrenergic neuronal blocker:
Guanethidine.

LIPID-MODIFYING AGENTS:

A) Statins: Lovastatin, simvastatin, pravastatin, rosuvastatin, atorvastatin, fluvastatin.

B) Fibrates:
Clofibrate, bezafibrate, fenofibrate, gemfibrozil, ciprofibrate.

C) Others:
Ezetimide, niacin, acipimox.

Because the invention contemplates dosage forms which contain exactly one active ingredient, most pharmaceutical products that may be made in tablet form can be usefully produced utilizing the current invention, understanding that special factors such as high milligram products are in general not especially well-suited to benefit from the current invention. Thus the above listing of pharmaceuticals, as it relates to tablets composed of a single active drug, or a fixed combination of drug contained within a specific layer, is illustrative and not intended to limit the scope of the invention. Also, no limitation is intended regarding the situation in which the top and bottom layers contain different active drugs.

The tablets of the invention may be made using granulation-compression techniques that are conventionally employed in the pharmaceutical industry, which may utilize a Hata or Manesty three-layer tablet press. These techniques include wet granulation methods; dry granulation techniques, such as slugging and grinding; or direct compression methods using a dry powder mix or mixes.

The cylindrical tablets of Fig. 1 are preferably made in a round cylindrical tablet die. First, an active drug granulation is fed to the die and pre-compressed. Next, an inert granulation is then fed to the die and an additional pre-compression step is carried out. Next, a second active granulation is fed to the die and a final compression is carried out to form the three-layered tablet. The tablet of Fig. 1 differs from prior art three-layer tablets in that its diameter is less than its height. The diameter of the tablet is measured across the circular cross section *t* and the height is measured along section *h*. Generally the height to diameter ratio (h:t) will be about 1.2:1 to 5:1 or preferably 2:1 to 4:1. An important advantage of the presently claimed tri-layered tablets is that they are conveniently breakable completely through the inert layer. As best seen in Fig. 1, the active upper portion 2 and the lower active portions 4 contain the same or different active drug compositions.

Bi-layer or Tri-layer Tablet without an Inert Layer

A bi-layer tablet according to the invention may comprise actives such as prednisone and

theophylline. The bi-layer tablet may be made as an elongated structure in which the height is greater than any transverse dimension to facilitate handling and convenient separation of the layers either manually or by a mechanical cutting device such as a tablet-cutter. The tablet may for example be produced by first placing a granulation of theophylline in a tablet press and tamping the granulation in a pre-compression step. Then a granulation of prednisone, which may have a different color than the theophylline granulation, is added and a tablet is formed by compression to form the bi-layer tablet. After the tablet is removed from the tablet press, scoring may optionally be performed, for example at the junction of the two layers.

A tri-layer tablet may be made as was described in the prior section by utilizing an active granulation instead of an inert granulation. Then scoring or notching may occur, for example at the junctions, namely the junctions of the top and middle layer and the middle and bottom layer. In this tablet, all layers would most preferably have different colors and may have distinguishing markings as well.

It may be appreciated that within the scope of the present invention is the case of incompatibility of materials contained within the different layers of the bi-layer tablet described above: the addition of a thin mutually compatible inert layer that may not be conveniently separated through without affecting at least one of the active layers is contemplated within the scope of the present invention. This

would produce a tri-layer tablet which differs from the prior art in that the active layers would be conveniently though not precisely separable one from the other, and which as in the bi-layer tablet described in this section has h greater than or equal to t.

All examples of potential combination products disclosed in the prior section may be utilized in the bi-layer tablet. A tri-layer tablet as described in the current section may usefully be made by, for example, utilizing one member from each of a different class of antihypertensive agents, or utilizing one statin and two different antihypertensive agents. Additionally, a useful invention as is disclosed in the current section would involve a tablet in which the top and bottom layers contained identical drug(s), with the middle layer containing different active drug(s).

The following tabletting formulations illustrate typical formulas for use in making dosage formulations according to the invention.

EXAMPLE 1

Ingredients	percent (w/w)
API*	15.00
Starch 1500®	21.12

Dicalcium phosphate, dihydrate	31.69
Tricalcium phosphate	31.69
Magnesium Stearate	0.50
Total	100.00

Process (Direct Compaction)

Manufacture by direct compaction. Blend in a "V" blender for 10 minutes and compress on a suitable tablet press. The tablets are made on a 16 station standard tablet press using ¼ inch standard concave punches at 13-15 kN force.

*ACTIVE PHARMACEUTICAL INGREDIENT

EXAMPLE 2

Ingredients

	Percent (w/w)
API	85.90
Starch 1500	6.76
Microcrystalline cellulose (50μm)	5.66
Powdered cellulose	1.68
Total	100.00

Process (Direct Compaction)

All ingredients are blended for 15 minutes in a twin-shell blender. Tablets are compressed using a standard tablet machine using 3/8 inch round standard concave punches at 10-12kN.

EXAMPLE 3

Wet granulation process

The granulations are made using a Planetary Mixer.

Compaction Process

Tablets are compressed on a rotary tablet press.

	Percent (w/w)		
Formulation	A	B	C
API	85.10	85.10	85.10
Starch 1500 (dry)	14.65	11.73	9.65
Starch 1500 (in water)	-	2.92	-
PVP(K-90)	-	-	5.00
Magnesium Stearate	0.25	0.25	0.25

Blending

The blending is carried out in a "V" blender or double cone blender.

EXAMPLE 4

Direct Compaction Process

Ingredients

	Percent (w/w)
API	25.0
Microcrystalline Cellulose	20.0

Croscarmelose	2.0
Lactose	52.3
Talc	0.2
Magnesium Stearate	0.5
Total	100.0

Process

All ingredients are blended for 15 minutes in a twin-shell blender. Tablets are compressed using a standard tablet machine using 1/4 inch flat faced beveled edge punches using 12-14kN of force.

EXAMPLE 5

Wet Granulation Process

Ingredients

	Percent (w/w)
API	27.000
Lactose, monohydrate	43.271
Pregelatinized Starch	6.756
Colloidal SiO.sub.2	1.351
Crospovidone	2.703
Microcrystalline Cellulose	13.513
Hydrogenated Castor Oil	5.405
Purified Water	as needed

Components 1-3 are milled and blended together and

water is added to granulate the blend. The wet granules are screened and oven dried. The dried granules are then milled together with components 5-7. Component 4 is screened and then mixed with the other ingredients. The resulting mixture is then compressed into a core using 3/8 inch round standard concave punches at 12-14kN force.

The thus- made cores are coated with a coating solution prepared as follows:

EXAMPLE 6

Ingredients

	Percent (w/w)
Hydoxypropylmethylcellulose (HPMC) (2910, 3 cps)	97.42
Polysorbate 80(PS-80)	2.38
Purified Water	as needed
Talc	0.2

PS-80 is dissolved in the water and HPMC is added. The previously made cores are then coated with this solution and the wet coated tablets are dried. The dried tablets are then dusted with the talc component.

EXAMPLE 7

Formulation for preparation of the middle (inert) layer of a three layer tablet:

Ingredients	Percent (w/w)
Starch 1500®	26.12
Dicalcium phosphate, dihydrate	36.69
Tricalcium phosphate	36.69
Magnesium Stearate	0.50
Total	100.00

Process (Direct Compaction)

Manufacture by direct compaction. Blend in a "V" blender for 10 minutes and compress on a suitable tablet press.

Ingredients	Percent (w/w)
Microcrystalline Cellulose	25.0
Croscarmelose	2.0
Lactose	72.3
Talc	0.2
Magnesium Stearate	0.5
Total	100.0

Process

All ingredients were blended for 15 minutes in a twin-shell blender.

Tablets were compressed using a standard tablet machine.

While certain preferred and alternative embodiments of the invention have been set forth for purposes of disclosing the invention, modifications to the disclosed embodiments may occur to those who are skilled in the art. Accordingly, this specification is intended to cover all embodiments of the invention and modifications thereof which do not depart from the spirit and scope of the invention.

Claims:

1. A tablet dosage form comprising three stratified layers wherein a middle layer is substantially inert and is conveniently and completely dividable by the application of force, and adjoins additional layers, wherein said additional layers have active ingredients, identical or differing, and wherein upon complete division of said middle layer, said additional layers are separate from each other and intact.

2. A bi-layer tablet, each layer containing one or more active ingredient(s) in each layer, said bi-layer tablet having a height that is greater than or equal to the width, with differentiation of said layers to allow for convenient separation from each other of said layers, though such separation will be imprecise .

3. A tri-layer tablet, each layer containing one or more active ingredient(s) in each layer, said tri-layer tablet having a height that is greater than or equal to the width, with differentiation of said layers to allow for convenient separation from each other of said layers, though such separation will be imprecise.

4. A method of administering a drug or drugs to an animal in need thereof which comprises administering said drug or drugs in a dosage form having three stratified layers wherein a middle layer is substantially inert and is conveniently and completely dividable by the application of force, and adjoins additional layers, where said additional

layers have active ingredients, identical or differing, and where upon division of said middle layer, said additional layers are separate from each other and intact.

5. A method of administering a drug or drugs which comprises administering said drug or drugs in a bi-layer tablet, each layer containing one or more active ingredient(s) in each layer, said bi-layer tablet having a height that is greater than or equal to the width, with differentiation of said layers to allow for convenient separation from each other of said layers, though such separation will be imprecise .

6. A method of administering a drug or drugs to an animal in need thereof which comprises administering said drug or drugs in a tri-layer tablet, each layer containing one or more active ingredient(s) in each layer, said tri-layer tablet having a height that is greater than or equal to the width, with differentiation of said layers to allow for convenient separation from each other of said layers, though such separation will be imprecise.

ABSTRACT

Tablets are described having three layers wherein a middle (central) layer is an inert layer that adjoins two additional layers where said additional layers have active ingredients, identical or differing, said additional layers being separable from each other, by the application of force applied to the middle layer, into separate units having predetermined compositions. In addition, a bi-layer tablet is disclosed wherein each layer contains one or more active ingredient(s), said bi-layer tablet having a height that is greater than the width, which allows for separation of said layers from each other.

1322-012

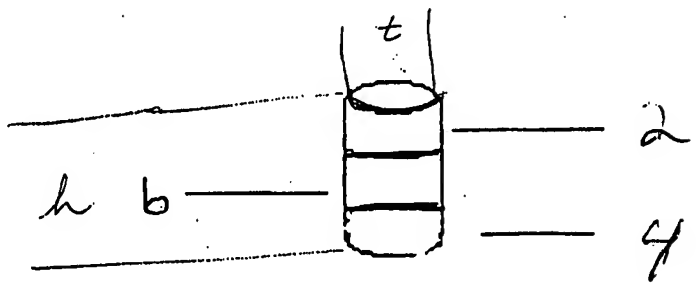

FIG. 1

1322-012

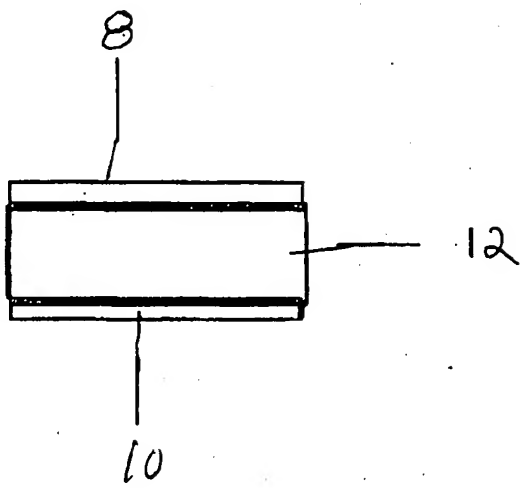

FIG. 2

1322-012

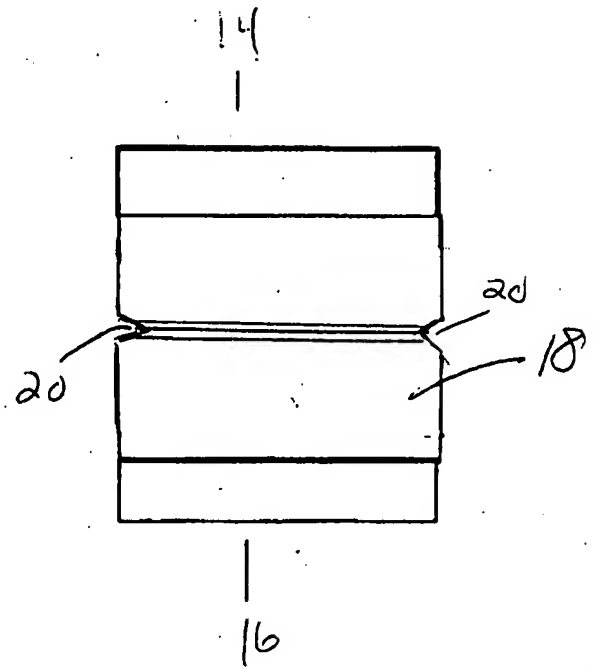

FIG. 3

1322-012

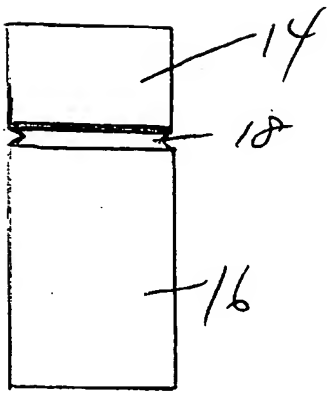

FIG. 4